Calculated, Risk Is Worth Benefit of Eating Fish

Pregnant women's diet can make babies smarter, as long as mercury consumption is minimized, a Harvard study shows.

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Because fish can be healthful as well as hazardous, medical experts have grappled for years with what advice to give people, particularly pregnant women, about how much is safe to eat.

A new study by Harvard University doctors concludes that pregnant women can boost their baby's intelligence by eating fish a couple of times a week, but only if they avoid varieties with large concentrations of mercury.

Fish is full of omega-3 fatty acids, which help young brains develop and seem to protect against heart disease. But it also is tainted by mercury, a potent neurotoxin that interferes with the building of brains.

The new study of 135 Boston-area babies is considered important because it quantifies and compares the risks and benefits of a fish diet.

The researchers concluded that pregnant women should eat fish because their babies are likely to score higher on intelligence tests. But they also reported that the benefits of the nutrients disappear and the babies' intelligence scores drop substantially if the fish contains high levels of mercury.

Nearly all fish contains traces of mercury, but large marine species such as swordfish, shark and albacore tuna accumulate the highest levels.

About 630,000 babies a year are born with mercury exposure that could reduce their mental abilities, the U.S. Environmental Protection Agency estimates.

Mercury can harm adults — hampering memories, causing hair to fall out and perhaps raising the risk of heart disease — but fetuses are considered the most vulnerable because neurological effects have been found at low levels.

Dr. Philippe Grandjean, an environmental epidemiologist at the University of

Southern Denmark and Harvard University who has studied the effects of mercury on children for 20 years, said the new findings added to the mounting evidence that women should eat fish but follow warnings to limit the types and amounts they consume.

Previously, Grandjean and others presented similar findings for school-age children, reporting that their mental skills, particularly memory, vocabulary and attention, were reduced if they had been exposed in the womb to relatively low levels of mercury.

Grandjean, who was not involved in the latest study, said infant intelligence was highly variable so it was "surprising that the authors were able to detect both a positive effect of fish intake and an adverse effect of mercury. That would suggest that these effects [on the infants] are quite strong."

The women in the study ate fish on average once a week during the second trimester of their pregnancy. The highest intelligence scores were among the babies whose mothers had consumed more than two helpings of fish per week but whose mercury levels remained under 1.2 parts per million, according to the report published online last month in the journal Environmental Health Perspectives.

For each additional weekly serving of fish, the babies' intelligence scores increased by 4 points, or an average of almost 7%. But for every increase of 1 part per million of mercury, the babies' intelligence scores dropped by 7.5 points, or 12.5%. A woman could raise her mercury level by 1 ppm if she ate an average-sized serving of swordfish once a week, said Dr. Emily Oken of Harvard Medical School, the study's lead researcher.

"The range of fish intake in our study was from zero to 5.5 servings per week, so these were not women who were eating fish daily or multiple times a day," said Oken, who specializes in pregnancy and nutrition.

The study does not provide details about which fish or how much fish pregnant women should eat. But its findings support the U.S. Food and Drug Administration's guidelines, issued in 2004, which recommend that pregnant and nursing women and those who might become pregnant eat up to two meals, or 12 ounces, of fish a week and that they avoid certain types of fish entirely. Young children are advised to follow the same guidelines because their brains are still developing.

The FDA entirely rules out swordfish and shark as well as king mackerel and tilefish, found on the Atlantic Coast and Gulf of Mexico, for pregnant and nursing women and young children. Some white and albacore tuna, canned and fresh, also have high mercury levels. Generally, the darker the fish meat, the higher the mercury content.

Sardines, herring, canned light tuna, cod, haddock, tilapia, sea bass and shrimp are considered good, low-mercury choices. Small fatty fishes such as sardines and herring are especially beneficial to babies because they contain a lot of fatty acids.

Salmon is generally low in mercury and high in fatty acids, but some farmed salmon contains high concentrations of other contaminants, PCBs, which are also risky for babies.

In California, grocery stores and restaurants selling fish are required to post mercury warnings for women and young children. The EPA also has issued localized advisories for some species caught by recreational fishermen, particularly in the Great Lakes and the San Francisco Bay.

Despite the warnings, many pregnant women — and their doctors — are confused.

"Based on personal experience with colleagues, it seems to me that many doctors are as confused about this issue as patients are," said Oken, who practices medicine at Harvard Pilgrim Health Care in Boston.

Some women say their obstetricians do not tell them about the FDA guidelines or give them specific advice about fish. Many are unaware they should avoid swordfish and limit tuna and other fish. Others stop eating all fish during pregnancy, which means their babies do not get its brain-enhancing effects.

"Women may indiscriminately reduce fish consumption in response to concerns about mercury exposure, perhaps substituting fish with other less healthful foods," the Harvard researchers said in their report. In addition to fatty acids, fish is high in protein, iron, vitamin E, selenium and other nutrients.

Scientists disagree on how much mercury is safe. The EPA based its conclusions on studies of about 1,700 first-graders on the Faroe Islands, in the North Atlantic. However, some scientists debate the risks of fish because whale was the source of the mercury there and similar tests on children in the island nation of Seychelles found no effects related to fish.

In tests designed by neuropsychologists to study early signs of intelligence and memory, the Boston-area babies were shown photographs of new faces and ones they had been shown before, and the researchers recorded how much time they spent studying each one. Babies score higher on the test if they move quickly from the familiar face, indicating recognition, to exploring the new face.

Dr. Jane Hightower, a San Francisco internist who has detected excessive mercury levels in many of her patients, particularly those who eat swordfish, said

consumers might have to resort to omega-3 supplements to get the benefits of fish without the risks.

"The fact is we need good protein sources that are beneficial and low in saturated fat and without contaminants," Hightower said. "If the polluting industries, the fishing industry, government officials and our political representatives cannot resolve this mercury problem in our air, water and fish, the supplement industry will be left to resolve it for the consumer."

Mercury is a natural element found in the Earth's crust, but when released into the air through smokestacks, it spreads globally and accumulates in tissues of animals, particularly fish. Coal-fired power plants, largely in Asia, are the largest sources of man-made mercury emissions.

The FDA's recommendations on fish consumption are available at http://www.cfsan.fda.gov/dms/admehg3.html .